

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method to prepare a cross-linked sol-gel-like material comprising contacting a sol-gel like material with a cross-linking agent to provide the cross-linked aerogel sol-gel material.
2. (Original) The method of claim 1, wherein the cross-linking agent is an isocyanate.
3. (Original) The method of claim 1, wherein the cross-linking agent comprises a diisocyanate, an acid anhydride, an acylchloride, a bis(acid anhydride), or a bis(acylchloride).
4. (Original) The method of claim 1, wherein the cross-linking agent comprises an attached group.
5. (Currently Amended) The method of claim 4, wherein the attached group is an absorbant, a catalyst, a fluorophore fluoriphore, a biomolecule, a redox active label, or a reactive group.
6. (Currently Amended) The method of claim 1, further comprising drying the cross-linked sol-gel like material to form a cross-linked aerogel sol-gel-material.
7. (Currently Amended) The method of claim 6, wherein the cross-linked aerogel sol-gel material is based on silica a-silica aerogel.
8. (Currently Amended) The method of claim 1, wherein the sol-gel-like material is substantially filled with a solvent.

9. (Currently Amended) The method of claim 8, wherein the solvent is selected from the group consisting of water, ketones, alcohols, esters, carbonates, lactones, hydrocarbons, and mixtures thereof.
10. (Original) The method of claim 9, wherein the alcohol is methanol or ethanol.
11. (Original) The method of claim 9, wherein the ketone is acetone.
12. (Original) The method of claim 9, wherein the solvent is propylene carbonate, ethyl acetate, or butyrolactone.
13. (Currently Amended) The method of claim 1, wherein the sol-gel ~~like~~ material is based on silica.
14. (Currently Amended) The method of claim 13, wherein the silica is prepared from silicon alkoxides alkoxy-silica via an acid or a base-catalyzed route.
15. (Original) The method of claim 1, wherein the cross-linking agent is in a solvent.
16. (Original) The method of claim 15, wherein the solvent is selected from the group consisting of water, alcohols, ketones, esters, carbonates, lactones, and mixtures thereof.
17. (Original) The method of claim 16, wherein the alcohol is methanol or ethanol.
18. (Original) The method of claim 2, wherein the isocyanate is a monoisocyanate, a diisocyanate, a triisocyanate, a tetraisocyanate, a polyisocyanate, an oligoisocyanate, or a combination thereof.

19. (Original) The method of claim 2, wherein the isocyanate is hexamethylene diisocyanate, poly(hexamethylene diisocyanate), toluene diisocyanate, diphenylmethane diisocyanate, an aliphatic polyisocyanate, triphenylmethyl triisocyanate, or a mixture thereof.
20. (Currently Amended) The method of claim 6, wherein the sol-gel ~~like~~ material is dried supercritically.
21. (Currently Amended) The method of claim 20, wherein the sol-gel-~~like~~ material is dried with liquid carbon dioxide.
22. (Currently Amended) The method of claim 6, wherein the drying is conducted at ambient pressure ~~sol-gel like material is air dried~~.
23. (Original) A material produced according to the method of claim 1.
24. (Original) A material produced according to the method of claim 6.
25. (Currently Amended) A cross-linked aerogel sol-gel material wherein the cross-linking agent is deposited on the surfaces surrounding the internal pores of a preformed sol-gel material.
26. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 2% by weight of the cross-linked aerogel sol-gel material.
27. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 5% by weight of the cross-linked aerogel sol-gel material.

28. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 10% by weight of the cross-linked aerogel sol-gel material.
29. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 30% by weight of the cross-linked aerogel sol-gel material.
30. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 50% by weight of the cross-linked aerogel sol-gel material.
31. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 80% by weight of the cross-linked aerogel sol-gel material.
32. - 35. (Cancelled)
36. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the sol-gel material is based on silica aerogel is a silica aerogel.
37. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linking agent is aerogel is cross-linked with an isocyanate.
38. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linking agent is aerogel is cross-linked with hexamethylene diisocyanate, poly(hexamethylene diisocyanate), toluene diisocyanate, diphenylmethane diisocyanate, an aliphatic polyisocyanate, triphenylmethyl triisocyanate, or a mixture thereof.

39. (Currently Amended) The cross-linked aerogel sol-gel material of claim 25, wherein the cross-linked aerogel sol-gel material is stronger or more robust than a non-cross-linked sol-gel material less brittle than native silica.
40. (Currently Amended) The cross-linked aerogel sol-gel material of claim 68 25 , wherein the sol-gel material is an aerogel and the cross-linked sol-gel material does not collapse when in contact with a liquid that comprises water, an alcohol, an ether, a hydrocarbon, an ester, a ketone, a carboxylic acid, a phosphoric acid, or a liquefied gas.
41. (Currently Amended) The cross-linked aerogel sol-gel material of claim 40, wherein the liquefied gas is nitrogen, argon, helium, hydrogen, or oxygen.
42. (Currently Amended) The cross-linked aerogel sol-gel material of claim 40, wherein the hydrocarbon is kerosene, gasoline, jet fuel, or rocket fuel.
43. (Currently Amended) A method to link an attached group to an aerogel sol-gel material comprising
  - a) contacting a sol-gel like material with a cross-linking agent that includes the attached group to form a cross-linked sol-gel like material; and
  - b) drying the cross-linked sol-gel like material from the aerogel.
44. (Currently Amended) A capacitor comprising a cross-linked aerogel sol-gel material.
45. (Currently Amended) A dielectric comprising a cross-linked aerogel sol-gel material.
46. (Currently Amended) An electrical circuit comprising a cross-linked aerogel sol-gel material.
47. (Currently Amended) A thermal insulating material comprising a cross-linked aerogel sol-gel material.

48. (Original) A tile, door, panel, shingle, shutter, beam, cooler, article of clothing, shoe, or boot comprising the thermal insulating material according to claim 47.
49. (Currently Amended) A structural material comprising a cross-linked aerogel sol-gel material.
50. (Currently Amended) A method to dry a cross-linked aerogel sol-gel material comprising:
  - a) washing the cross-linked aerogel in sol-gel material with a solvent to form a washed aerogel; exchange the pore-filling solvent of the cross-linked sol-gel material with a new solvent; and
  - b) drying the solvent-exchanged sol-gel material washed aerogel under non-supercritical conditions.
51. (Original) The method of claim 50, wherein the drying is conducted at ambient pressure.
52. (Original) The method of claim 50, wherein the drying is conducted at a temperature that is at least about 4°C.
53. (Original) The method of claim 50, wherein the drying is conducted at a temperature that is at least about 20°C.
54. (Original) The method of claim 50, wherein the drying is conducted at a temperature that is at least about 40°C.
55. (Original) The method of claim 50, wherein the drying is conducted at a temperature that is at least about 60°C.

56. (Original) The method of claim 50, wherein the drying is conducted at a temperature that is at least about 80°C.
57. (Original) The method of claim 50, wherein the drying is conducted at a temperature that is at least about 100°C.
58. (Original) The method of claim 50, wherein the drying is conducted at a temperature that is at least about 200°C.
59. (Original) The method of claim 50, wherein the drying is conducted at a temperature that is about or less than 300°C.
60. (Original) The method of claim 50, wherein the drying is conducted at a temperature of about 40°C.
61. (Original) The method of claim 50, wherein the drying is by freeze-drying.
62. (Original) The method of claim 50, wherein the solvent is an organic solvent.
63. (Original) The method of claim 50, wherein the organic solvent comprises a (C<sub>1</sub>-C<sub>20</sub>)alcohol, a (C<sub>1</sub>-C<sub>20</sub>)alkane, a (C<sub>1</sub>-C<sub>20</sub>)cycloalkane, a (C<sub>1</sub>-C<sub>20</sub>)alkene, a (C<sub>1</sub>-C<sub>20</sub>)cycloalkene, a (C<sub>1</sub>-C<sub>20</sub>)alkyne, an aryl, a (C<sub>1</sub>-C<sub>20</sub>) alkane substituted aryl, a (C<sub>1</sub>-C<sub>20</sub>)alkene substituted aryl, or a (C<sub>1</sub>-C<sub>20</sub>)alkyne substituted aryl.
64. (Original) The method of claim 62, wherein the organic solvent is a (C<sub>5</sub>-C<sub>10</sub>)alkane.
65. (New ) The method of claim 1 wherein said sol-gel material is a sol-gel material having pores filled with a solvent, a xerogel or an aerogel.

66. (New) The method of claim 1 wherein the chemical functionality of the surfaces surrounding the pores of said sol-gel material acts as a template for reaction with the cross-linking agent.
67. (New) The method of claim 1 wherein the surfaces surrounding the pores of the sol-gel material act as a template for the cross-linking agent.
68. (New) The cross-linked sol-gel of claim 25 wherein said sol-gel material is a sol-gel material having pores filled with a solvent, a xerogel or an aerogel.
69. (New) The cross-linked sol-gel of claim 25 wherein the chemical functionality of the surfaces surrounding the pores of said sol-gel material acts as a template for; reaction with, accumulation of, or both; the cross-linking agent.
70. (New) The cross-linked sol-gel of claim 25 wherein the surfaces surrounding the pores of the sol-gel material act as a template for the cross-linking agent.